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Interactive comment on “A comparison of the chemical sinks of atmospheric organics in the gas and aqueous phase” by S. A. Epstein and S. A. Nizkorodov

Anonymous Referee #2

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This paper evaluates the relative importance of gas and aqueous phase photolysis and oxidation by OH for various volatile organic compounds (VOCs). The authors use a mathematical approach to guide researchers for further studies. For most of the compounds studied aqueous photolysis is not an important sink, except for glyceraldehyde and pyruvic acid.

The authors may want to include references for OH generation due to photolysis of these VOCs on page 10017, line 20. Additionally, they may want to expand more (beyond methyl peroxide) on the discussion about the importance of this OH source and how it may affect their analysis.

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Page 10019, line 6: As the authors state, the assumption of gas and aqueous phase partitioning being in equilibrium is not necessarily always accurate. It would be interesting to see what happens if this is not the case and how the results may vary.

Page 10020, line 23: The authors should elaborate some more on this assumption about quantum yield.

Page 10026, line 5: Instead of using the largest value for LWC, why don't the authors use a more average value. There are already a few assumptions they make that result in upper estimates, and in continuing to do so, they may fail to provide more realistic values.

Two references are missing from the list, Ervens et al. 2011 and Sander et al. 2011. Ervens 2010 is repeated twice.

Page 10020, line 20: Add a reference for depression of quantum yield in solution.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 10015, 2012.

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